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| 10/537,169 | 06/01/2005 | Hiroshi Kashino | 04558/095001 | 1116 |
| 22511 | 7590 | 03/05/2009 | EXAMINER | |
| OSHA LIANG L.L.P. | | | SUITTE, BRYANT P | |
| TWO HOUSTON CENTER | | | | |
| 909 FANNIN, SUITE 3500 | | | ART UNIT | PAPER NUMBER |
| HOUSTON, TX 77010 | | | 1795 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@oshaliang.com
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| | | |
|------------------------------|--------------------------------------|---------------------------------------|
| Office Action Summary | Application No. 10/537,169 | Applicant(s) KASHINO ET AL. |
| | Examiner BRYANT SUITTE | Art Unit 1795 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 4 December 2008.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-19 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 01 June 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/G6/08)
 Paper No(s)/Mail Date 12/4/08, 12/14/08, 7/21/05, 6/1/05

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date: _____
 5) Notice of Informal Patent Application
 6) Other: _____

POWER GENERATING ELEMENT FOR LIQUID FUEL CELL, METHOD FOR PRODUCING THE SAME AND LIQUID FUEL CELL USING THE SAME

Examiner: Suitte 10/537,169 February 26, 2009

DETAILED ACTION

1. The Applicant's amendments of the present application filed on December 4, 2008 were received. Claims 1, 12, and 16 amended.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on September 4, 2008.

Claim Rejections - 35 USC § 103

3. The claims rejections under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al. (US 2004/0115502) in view of Takeuchi et al. (US 4,894,355) is withdrawn because claims 1, 12 and 16 were amended.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4 and 6-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al. (US 2004/0115502) in view of Tanaka et al. (2004/0096729) and further in view of Kumar et al. (WO 2004/030119).

Regarding claim 1, 10, 12, and 16 Fukuda discloses an electric power generating polymer electrolyte fuel cell comprising a cathode (2b) (reducing oxygen), an anode (2a) (oxidizing fuel) and a solid electrolyte disposed between the anode and cathode. See figure 1. The catalyst is formulated by dispersing the catalyst layer in an organic solvent and then dried (removal of solvent) to formulate the catalyst layer particles (crushed particles). See paragraph 51. The method for producing a liquid fuel cell is disclosed above. Fukuda does not disclose a pore volume of the catalyst layer per se. However, it is the position of the examiner that the pore volume of the pore with respect to a total pore volume is inherent, given that the chemical composition of the electricity generating fuel cell disclosed by Fukuda and the instant application are similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. *In re Robertson* 49 USPQ2d 1949 (1999). Alternatively, the disclosure of Fukuda et al. differs from Applicant's claims in that Fukuda et al. do not disclose a pore volume of the pore is 4% or more with respect to a total pore volume. However, Fukuda et al. recognize the pore volume compared to the total pore volume is determined by the pore diameter size of a pore within the pore size range of 0.3 to 2.0 μm . See figures 3a, 3b, 6a, and 6b. Therefore, it would have been within the skill of the ordinary artisan to adjust the size of the pore to yield a pore volume of the pore that is 4% or more with respect to total pore volume. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* *In re Boesch*, CCPA 1980, 617 F.2d 272, 205 USPQ215.

Furthermore, Fukuda does not disclose a thickness of the catalyst layers or a pore diameter of a negative electrode. Tanaka discloses a fuel cell comprising catalyst layers with a thickness range of 0.1 to 10000 μm and an anode catalyst layer comprising a pore diameter of ranging from 0.1 nm to 10 μm . See paragraphs 57 and 58. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a catalyst layer with a thickness range of 0.1 to 10000 μm and an anode catalyst layer comprising a pore diameter of ranging from 0.1 nm to 10 μm with the fuel cell of Fukuda because Tanaka teaches that a particle diameter is smaller than 0.1 nm, the speed of the catalyst reaction would slow down. See paragraph 57.

Furthermore, Fukuda does not disclose an amount of the catalyst contained in the catalyst layer of the negative electrode is 0.5 mg/cm² or more per unit area. Kumar discloses a direct methanol fuel cell stack comprising an anode catalyst comprising platinum-ruthenium (catalyst) a 4 mg/cm². See paragraph 65. Therefore, it would have been obvious to one having ordinary skill in the art to utilize the anode catalyst of Kumar with the fuel cell of Fukuda because Kumar discloses a fuel cell stack comprising an anode catalyst comprising platinum-ruthenium creates a fuel cell stack with an improved performance. See abstract.

Regarding claims 2, 13 and 17, Fukuda discloses a catalyst layer comprises platinum or platinum-ruthenium alloy (catalyst). See paragraphs 52 and 65.

Regarding claims 3, 4, 14, 15, 18 and 19, Fukuda discloses carbon black (conductive material) supports a platinum-ruthenium alloy. See paragraph 65.

Regarding claim 6, Fukuda discloses a fuel cell comprising polytetrafluoroethylene (PTFE) (insulating material) and Nafion (proton conductive material). See 56 and 65.

Regarding claim 7, Fukuda discloses a backing layer 5 comprising a two-layer structure (not shown in the figure) formulated with a layer of the carbon black and a PTFE particle material. The backing layer supports the oxidation catalyst layer. See paragraph 57 and figure 1.

Regarding claim 8, Fukuda further discloses a catalyst layer comprising a pore diameter range from 0.1 to 1 μm . See paragraph 55.

Regarding claim 9, Fukuda discloses an electric power generating fuel cell as recited above. However, Fukuda does not disclose a catalyst layer thickness.

Tanaka discloses a fuel cell comprising catalyst layers with a thickness range of 0.1 to 10000 μm . See paragraph 58. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a catalyst layer with a thickness range of 0.1 to 10000 μm as disclosed by Tanaka with the fuel cell of Fukuda because Tanaka teaches that a thickness smaller than 0.1 μm makes it difficult to withstand the pressure during cell production and that for fuel supply. See paragraph 58.

Regarding claim 11, Fukuda discloses a liquid fuel is a methanol solution. See paragraph 61.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al. (US 2004/0115502), Tanaka et al. (2004/0096729) and Kumar et al. (WO

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2004/030119) as applied to claims 1-4 and 6-19 above, and further in view of Muranaka et al. (US 5,500,292).

Regarding claim 5, Fukuda discloses a catalyst layer, however, Fukuda does not disclose an additional catalyst layer disposed between the solid electrolyte and the positive electrode.

Muranaka discloses a fuel cell comprising a second catalyst layer disposed between the solid electrolyte and the positive electrode. See figure 5. Therefore it would have been obvious to one having ordinary skill in the art to utilize the configuration of the fuel cell of Muranaka with the fuel cell of Fukuda because Muranaka discloses the additional catalyst layer prevents the flooding of the fuel cell. See abstract.

Response to Arguments

7. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRYANT SUITTE/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795